

ONLY FRACTION OF POWER GENERATED USED IN DRIVING

Less Than One-Eighth of Power Generated by Explosion Reaches Rear Wheels as Driving Force—How Unnecessary Losses Occur.

The average motor car owner will be startled to be informed that out of all the power that is generated by the explosion in the combustion chamber less than one-eighth is delivered in actual driving force at the rear wheels. Astonishing as it seems, this is actually true. If, then, seven-eighths of the original power is lost on the way to the driving wheels, how vitally important it is for the car owner to see that no further and unnecessary losses occur during the journey.

With the Water.

When the power generated in the combustion chamber is 100 per cent, we find that the first loss amounts to 35 per cent, which is dissipated in the cooling water. Another 35 per cent is lost through direct radiation and in the exhaust gases.

The exhaust pipe and muffler account for a further 2 per cent, and friction in the motor for nearly 5 per cent. Wind resistance uses up 7 per cent of what is left, and there is a loss through the tires of nearly 4 per cent. The transmission accounts for a further subtraction of practically 3 per cent.

Need Not Worry.

As long as these power losses are kept at their normal proportion there is no cause for worry, but let the car owner get careless in maintaining the vehicle and the losses immediately mount upward in geometrical ratio. Fortunately, by taking heed, it is not hard to keep the power dissipation under control, as we shall show.

The first item on our list, power lost through dissipation in the cooling water, can scarcely be controlled by the ordinary car owner. Within the past year or two, however, it has taken up seriously the problem of reducing this item of waste. By means of thermostatic control it is now possible to keep the temperature of the engine at or near its point of maximum efficiency.

Form of Power.

Heat is simply a form of power. But unfortunately the internal friction of the internal combustion engine prevents more than a certain degree of temperature being utilized, because beyond that point the oil film, the protecting lubricant, would be broken down and the engine would be quickly ruined. However, by the use of thermostatic devices, designers have been able to reduce the amount of heat, which means power, wasted in the cooling water.

What he can do, however, is to see that there is no leakage from the engine. This includes gas leakage, ignition leakage, oil leakage, etc. The gasketing of the cylinder head, if it is such, must be good all the time, and there must be no leaks at the plugs or petcocks. In gasketing the head be sure to see that the gasket itself is perfectly clean and is mounted on clear surfaces.

Avoid Dents.

There must be no nicks or dents in metal or gasket. The head must be tightened carefully to avoid springing. It is advisable to give the threads of the spark plugs, valve stems and any other threaded device

in the engine a thin coat of stove blacking, which prevents or stops leakage and also makes removal of the parts easy any future time.

It must not be forgotten that the various accessories and devices located on and driven by the engine consume power; in some cases as much as 6 per cent of the total. Add to this the inevitable friction generated by the various moving parts of the engine and we get a tidy total.

Can't Cut It.

The car owner cannot cut down the consumption of power here, but he can keep it at its normal point by seeing that all these parts and accessories have a liberal quantity of lubricant of the proper grade and quality. The careful study of and attention to the directions on the lubrication chart are the safeguard here.

Again, carbon deposits in the combustion chamber are excessive wastes of power. A vigilant eye in the direction and removal of such deposits before they have a chance to reach serious proportions is necessary. In some cases owners who have excessive carbon trouble may be well advised to install a water feeding device on their engines after the cylinders have been thoroughly cleaned.

Water injected in this way in the form of steam tends to prevent the formation of carbon deposits in a clean cylinder.

There is one kind of power waste that is not to be excused, and that is through the use of too rich a mixture. This simply means that more gasoline than is necessary is being burned up and going out of the exhaust, possibly even in the form of liquid. And what is this but the most direct and criminal sort of waste, which the owner can stop any time he desires.

In addition any liquid fuel in the combustion chamber may work down past the piston rings into the crank case, and there contaminate the oil and increase the loss further by lowering the lubricating efficiency.

The Clutch.

The clutch wastes little power as long as it is running properly, but the minute it gets out of order and slips it fairly burns power up. Keep the clutch properly adjusted and throw out the clutch at stated intervals. A burr-cut or dry throughout collar may cause the drag and in addition may make clutch operation and gear shifting difficult.

The transmission inevitably wastes some power through friction, but if it is not kept well lubricated and properly running it becomes a prodigious waste. When there is any derangement in the transmission, bearings worn, shafts out of alignment, etc., power wastes are enormous. Trouble in the transmission should never be neglected.

Next in line come the universal joints, and these must be kept packed with the proper lubricant all the time. The rear axle unit must be at least three times a year cleaned out with kerosene and have fresh lubricant. When everything goes wrong with the rear axle its consumption of power is almost unbelievable. In this connection the wheel bearings must be kept in good condition; jack up the rear wheels and try them occasionally to see that they move freely.

In the tires the owner can help power losses by keeping them pumped up to pressure recommended by the maker. The wider the tire the more power it takes to carry it over the road, consequently the need for keeping the casing fully inflated. Also this very important item of maintenance preserves the tires and cuts down the bills.

There hardly is any need to mention to the experienced motorist that brakes which are not free will drag against the drum and literally eat up gasoline. A brake drag is so easy to discover—simply jack up the wheel and spin it around, listening for a scraping noise as it spins.

WHY GOOD ROADS?

Good roads mean higher land values. Good roads bring higher rental incomes. Land owners should lead the road improvement crusade. Good roads mean more dollars in their pockets, and more pleasures for their families.

Good roads save time in hauling. Time is money. Hauling costs are lowered by good roads because the size of the load is limited by the worst spot in the road.

Good roads mean improvement. "No man liveth unto himself alone," but bad roads tend toward rural isolation. We can live but once. Why not enjoy the chance to go where we please, when we please? The motor car and good roads make all distances short.

Town pleasures and country pleasures are only a stone's throw apart if joined by good roads. The country boys and girls are less likely to leave the farm if good roads bring the neighbors nearer.

Bad roads are a detriment to the farmer, but they are worse for the farmer's wife. Well kept roads mean better rural schools. Our country boys and girls are entitled to as good schools as our town children enjoy.

The doctor has a better chance to save lives if good roads shorten the distance from office to farm. Profit, pleasure, and public spirit demand improvement of the roads. We want good roads.

Studebaker Cars In Popular Favor During Season 1921

Their Popularity Rests in Quality, Durability and Dependable Performance.

E. P. Dykeman, local manager for J. Clark & Son, Ltd., says:—"Notwithstanding the fact that the total number of all automobiles sold (except Ford) was 40 per cent less than 1920, the total aggregate of sales for Studebaker cars was 39 per cent greater than in 1920—and in Canada 64 per cent greater than in 1920.

"The number of Studebaker cars sold in the year of 1921 in both Greater New York and in the Metropolitan district exceeded the sales of any other makes except Ford.

"Studebaker is the world's largest producer of six-cylinder cars. The only possible explanation of the popularity of Studebaker cars lies in their quality, durability and dependable performance in users' hands.

Proof that the cars stand up in service with minimum repairs is evidenced by the fact that our sales of repair parts in 1921 were 13 per cent less than they were in 1920, notwithstanding that 118,000 new cars were sold and put in operation in 1920 and 1921.

Based on the total estimated number of Studebaker cars in operation in 1921, we sold \$16.00 worth of parts per car for repairs from all causes, including accidents.

"The materials and workmanship in Studebaker cars measure up to the highest standards known to the automobile industry. Substantially better intrinsic values cannot be obtained at any price. The theory that high prices necessarily mean fine cars is fallacious, simply because prices are not based upon intrinsic values, but upon the production of individual makers, which vary widely according to their ability and manufacturing facilities.

Obviously, high costs of production, inevitably arising from incompetence or inadequate manufacturing facilities, means not only high prices but actually inferior cars.

"With \$70,000,000 of actual net assets, including \$10,000,000 of plant facilities, Studebaker stands unsurpassed in ability and resources to manufacture economically and give the greatest intrinsic value possible for a given price."

SUGGESTIONS TO CAR DESIGNERS

Accessibility of Various Parts Is Desideratum, Says Auto Car.

To those widespread manufacturers who are searching their chassis for points of improvement which will endear it to the heart of the eventual owner, we would make the following suggestions, says the Auto Car. Having purchased a car the average man desires to do as little as possible to except drive it, hence it is desirable to simplify the lubrication of the chassis parts to the greatest possible degree, and to make it an easy matter to replenish the engine oil, the gear box, and the back axle lubricant; moreover, the act of attending to these replenishments must cause the least possible exertion. It is worth while making the remark that matters so that carbon when formed can easily be removed. If for this purpose water joints have to be broken, it is necessary that they should be easy to remake.

As regards general accessibility, it is still necessary to remark that magnetic contact breakers should be situated where one can make adjustments and see what one is doing without difficulty. The accessibility of valves is greatly hampered on many cars by the proximity of carburetors, electrical instruments and so forth.

The addition of electrical accessories has greatly complicated the matter of general accessibility, and it is well to bear in mind if changes in equipment are contemplated. Dynamo and starting motor brushes need attention at times, and should, therefore, be easily reached.

If no automatic means of lubrication of the clutch spigot be provided, then care should be taken to see that the hand-lubricator can be reached without minimum trouble and without having to undo screwed-down floorboards, otherwise this lubrication is left to look after itself. On many cars admirable brake adjustments are provided, but in some cases with the body in position they cannot easily be reached. Designers are reminded that chassis accessibility is limited when the body is on, and thus it is of no use to scheme out an improvement unless this fact is borne carefully in mind. There are, of course, numerous points in regard to maintenance that can be cited.

With regard to roadability of cars, the three cardinal points on which in The Autocar we frequently harp, and which should be absolutely sound on any car, irrespective of its price, are spring suspension, steering and brakes. It should be possible to steer any touring car with two fingers whatever its size, and the steering should not be liable to wander when passing over bad surfaces. Either set of brakes should be capable alone of controlling the car on such a gradient as the Brooklands test hill; their application should be such that they can be put on sufficiently hard as just not to lock the wheels.

Of suspension much has been written and will be written, because there is no doubt that present-day cars, are, in many cases, not sufficiently well sprung for the deteriorated road surfaces over which they have to travel.

It is quite possible to design semi-elliptic springs back and front which will make a light four-seater car comfortable, whether carrying two or four passengers, over a very bad stretch of road without ability to bump, shudder, or wander.

LOWER UPKEEP MORE NECESSARY THAN LOW PRICE

Maintenance Most Important Factor in Sales, Says Service Expert.

Reduction in cost of car maintenance is pointed to as what is needed if rather than reduction in initial cost the industry is to expand its market by H. R. Cobleigh, secretary of service of the National Automobile Chamber of Commerce.

"One of the most encouraging signs of the times," says Mr. Cobleigh, "is that the falling off in demand has stimulated concern for the customer's satisfaction and has been an incentive to improve service rendered to car owners. We see an increasing manifestation of desire to cater to the motorist's want and on the part of all elements in the industry, the manufacturers to design and produce a car that will give better performance and be more convenient to attend and more accessible for repairs, and on the part of the dealers, garages and repair shops, to increase the efficiency of their repair and overhaul work, all to the end of reducing the car owner's cost of maintenance.

"There are very many people who would, so far as desire is concerned, own automobiles, but cannot because of the upkeep cost. We know that the first cost of automobiles is not the deterrent for more sales at present. If that were not so we could sell instead of giving away our used cars, as at present. We know that the desire to own automobiles is universal, therefore the inevitable conclusion is that it costs too much to keep them. Conversely, if we can make it cheaper to own cars the market for them will be immediately and also immeasurably widened.

To Lessen Cost of Overhauling.

Repairs and overhauls represent the bulk of maintenance cost and in these the biggest reducible element is the labor charge. Improved design to increase accessibility and reduce the time for overhaul operations will have increased attention from now on and go far toward accomplishing the desired end, but there will yet remain a great deal to be done and the most promising agency at hand is education toward the employment of better ways and means by all the factors engaged in rendering service to the car owner.

Buyers Concerned About Service.

"While the industry has been developing, and the mechanism and appointments of the product have been approaching more nearly perfection, the users have been developing a clearer understanding of what they can reasonably expect. We find ourselves selling now a motor-wise public. At least eighty per cent of our sales—if not more—are to those who have already owned cars and naturally we find them paying more attention to the reputation of the car as an instrument than to mechanical features or eye-appeal, that have heretofore made up the bulk of the salesman's arguments. The customers are becoming more concerned as to the character of service the dealer renders than with pride of ownership of the new vehicle. First cost is seldom now the sole determining factor in choice of purchase. Equal or greater consideration is given to its value as judged by performance and low cost of upkeep."

Ships Found By Wireless Direction

Two Instances Which Have Proven Efficiency of Radio in Saving Life.

London, March 28.—Practicability of the wireless direction finder has been amply demonstrated in two recent re-

scues at sea, in which the position of the ship in distress was not correctly reported in its S.O.S. calls.

The Mod, which was severely damaged in the recent North Atlantic storm, was a notable instance. The British vessel Melmore Head picked up the Mod's S.O.S. call and proceeded immediately for the position given. The captain of the Melmore Head failed to find the Norwegian steamer at the place indicated, but through the use of his direction finder found the damaged vessel seventy-six miles away from that point. The Melmore

Head arrived just in time to effect a rescue of the twenty-three men of the crew.

The Prize of Misquotation. Says a writer in the Cleveland Plain Dealer's Post Box:

"As a whole, the man who is employed can well afford to part with a few shillings to his 'verform' and shipwrecked brother sailing over the sands of time."

And, as Jake Falstaff says, it's a darn sight better than Longfellow's version, at that.

Motor Show Opens

Monday, April 3

At The Armories

Only the finishing touches remain before the opening of the doors for the largest and most impressive exhibition of Motor Cars ever attempted in Eastern Canada, an event which society has long anticipated with keenest interest, and which will be given under the distinguished

PATRONAGE

of His Honor Lieutenant Governor Pugsley, Honourable W. E. Foster, Premier of New Brunswick, Mayor E. A. Schofield, Colonel Ogilvie, D. O. C. Military District No. 7, and Members of Headquarters Staff.

Doors Open at 2.30 p.m.

FORMAL OPENING AT 8 P.M.

MISS BLENDA THOMPSON—CONTRALTO

Music by Jones' Orchestra.

TO AVOID CROWDING, it is suggested that those desirous of attending the Opening Ceremonies be at the Armories during the afternoon, arrangements for tea having been completed by the ladies of Fundy Chapter, I. O. D. E.

Arranged by the Saint John Automobile Trade Association, Limited, under Management of the Commercial Club, St. John.

Tickets on Sale
at Commercial
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Prince William Street,
daily, until 6 p.m.

The Tea
Room

where dainty refreshments will be served, will be conducted by Fundy Chapter, I. O. D. E.

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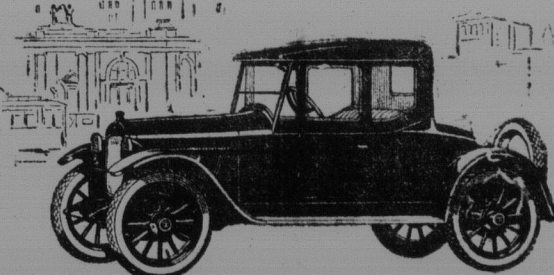
Very easily controlled. A compartment back of seat holds a grip, medicine case or other small packages. While a large roomy compartment at rear holds luggage. Roomy and luxurious, with plenty of leg and head room and plate glass drop windows.

A glance shows its attractive style and proportions

Is as prominent in this model as in all others and means 25 to 30 miles per gallon Gasoline, while you hardly notice the lubricating oil used and the repair bill is little or nothing.

Always ready to go, always ready to purr up the steepest hills, a "pick up" from 5 to 30 miles in ten seconds are some of the pleasing features of this car.

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Motor
Cars



Saves
Diamonds
For
Your
Family

There is no car in the world more economical than the Hupmobile. Fleets of Hupmobiles have been in operation for years in organizations that select their own cars by the cold-blooded test of cost per mile.

All models are equipped with cord tires and can be furnished with wood, wire or disc wheels.

Roadster or Touring, \$1,875 Roadster-Coupe, \$2,200 Coupe \$2,675 Sedan \$2,800

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